REMARKS / ARGUMENTS

Claims 6-13 remain pending in this application. Claims 1-6 have been canceled without prejudice or disclaimer.

Priority

Applicants appreciate the Examiner's acknowledgment of the claim for priority and safe receipt of the priority document.

35 U.S.C. §103

Claims 6-13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Towa KK (JP 03-202327) in view of Nakamura (JP 35-912644). These rejections are traversed as follows.

According to the present invention as recited in claim 6, the method of manufacturing a semiconductor device includes the step of providing a sheet made of a material that can impregnate and permeate the resin through plural openings in the material, and having through holes each having a diameter larger than that of the plural openings, and having the through holes form a shape which is substantially identical with the diameter of a second concaved portion. Therefore, only a cleaning sheet 17 needs to be clamped by a first mold 3 and a second mold 4. A cleaning resin 25 is supplied to cavities 6 in this state. Then, the cleaning resin 25 passes

11

through the through holes 17a of the cleaning sheet 17 in cavities 6 and is thus filled throughout cavity 6 without requiring lifting of the cleaning sheet 17. Since the diameter of the through hole 17a is substantially the same as the diameter of the cavity 6, there is little resistance caused by the cleaning sheet 17 against the resin flow inside cavity 6. The reference numerals used above in connect with Fig. 5 are used by way of example only and should not unduly limit the interpretation of the claims.

As shown in Fig. 8, by way of example, and in connection with claim 13, slits 29b are formed at the corners of the outer periphery of through holes 29a. In other words, slits 29b are formed at portions corresponding to air vents 14 and flow cavities 27 in communication with cavity 6 of second mold 4. Therefore, when the cleaning resin 25 is injected into cavity 6, the cleaning resin 25 is passed through the through holes 29a of the cleaning sheet 29 into cavity 6. Furthermore, the cleaning resin 25 passes through slits 29b at the corners of cavity 6 and flows into air vents 14 and flow cavities 27. Thus, the cleaning resin 25 can be contacted with the cleaning sheet 29 through slits 29b, and as such, the cleaning resin 29 can fill flow cavities 27.

Towa discloses a cleaning sheet having through holes 20_1 as pads for a cleaning resin. However, the cleaning effect realized by Towa is significantly lower because the flow velocity of the cleaning resin is decreased due to the resistance of the cleaning sheet against the resin flow inside cavity 2_1. Namely, a diameter of the through holes 2_1 according to Towa is smaller than a diameter of the cavity 20_1 as

12

can be seen in Fig. 2 of Towa. Therefore, the diameter of through holes 20_1 is smaller than through hole 17a of the present invention. In addition, Towa does not disclose that slits are formed at the corners of the outer periphery of the through holes. As such, since the cleaning resin cannot be contacted with the cleaning sheet at the corners of the through holes 20_1 of Towa, the cleaning resin cannot be filled into flow cavity 2_1. As such, it is submitted that the pending claims patentably define the present invention over Towa.
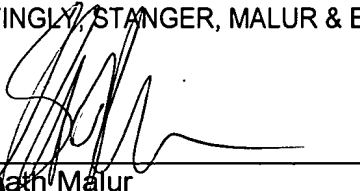
In addition, it is submitted that the deficiencies in the primary reference to Towa are not overcome by the resort to the remaining references. The present invention considers the problem caused by contaminants remaining in the corners of a cavity upon cleaning and have developed a novel and nonobvious way of cleaning the cavities such that contaminants do not remain at the corners.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.

By _____
Shrinath Malur
Reg. No. 34,663
(703) 684-1120